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A NEW ORDOVICIAN TRILOBITE FROM FLORIDA

BY H. B. WHITTINGTON

Introduction. The trilobite described below came from a core recovered from a deep well in Madison County, Florida. It is the only trilobite found in the numerous wells that have penetrated the Palaeozoic of Florida, and is relatively complete. Of special interest is its relationship to trilobites of central and southern Europe and north-west Africa (not with any so far known in North America), and its being by far the earliest calymenid to appear in North America. I am indebted to Dr. J. Bridge, U. S. Geological Survey, for inviting me to study the specimen, and to Drs. Bridge and Jean M. Berdan for allowing me access to the results of their preliminary study of the Palaeozoic rocks from test wells in Florida and adjacent parts of Georgia and Alabama. The advice on the identification of the trilobite offered by Dr. C. J. Stubblefield, Geological Survey of Great Britain, is gratefully acknowledged.

Age. The Florida trilobite is here regarded as related to early representatives of the calymenid-homalonotid groups, in particular to species of *Colpocoryphe*, but less closely to *Placsiacomia*. The former genus occurs in strata of Llanvirn (and probably early Llandeilo) age in Bohemia and Thüringia (R. and E. Richter, 1927), northwestern France (Rouault, 1849; Barrois, 1900), Portugal (Delgado, 1908), central Spain (Verneuil and Barrande, 1855), Morocco and Algeria (Gigout, 1949; G. and H. Termier, 1950). *Placsiacomia* occurs in younger strata, of Llandeilo age, in Bohemia and possibly Normandy (Prantl and Přibyl, 1948). The Florida strata may therefore be of Llanvirn-Llandeilo age, i. e. in North American terms approximately late Canadian or early Champlainian.

Paleogeographical Implications. Evidence brought forward recently by Harrington and Kay (1951) and Wilson (1952) has served to strengthen the impression that the early Ordovician faunas of South America, the Ouachita and Appalachian troughs, and northwestern Europe belong to the same general province. This likeness, at least between the Appalachians, Ireland, Scotland, and the Baltic, continues into Middle Ordovician times (cf. Stubblefield, 1939, pp. 57-60). Ordovician faunas of central and southern Europe (including West Shropshire and South Wales), and especially those of Llanvirn-Llandeilo time, include a characteristic group of genera, elements of which are rare or unknown farther north and west, i.e. in Scotland, Ireland, and the Appalachians (cf. Stubblefield, 1939, pp. 52-55). The Florida trilobite seems to be a lone representative of this more southerly fauna, and its presence may indicate that the Florida Palaeozoic rocks were laid down in a province faunally separated from that of the Appalachian-Ouachita trough (cf. King, 1950, pp. 657-658). In addition, Professor H. J. Harrington, University of Buenos Aires, informs me (personal communication) that the Florida trilobite is unlike any known in South America.

The oldest calymenid-homalonotid trilobites so far known in the Appalachian trough (and elsewhere in North America) are *Flexicalymene* and "*Brongniartella*", from Trentonian rocks of late Champlainian time. This is much later than the first appearance of calymenids in Lower Ordovician deposits of England and Wales, and considerably younger than the presumed age of the Florida strata in question. Thus the Florida trilobite is a representative not only of a different faunal province but of the earliest calymenids in North America. On the other hand, the Ordovician of Florida is a clastic sandstone and shale sequence, dark in color, not unlike the Llanvirn-Llandeilo sediments of central European areas. The occurrence of a "Bohemian" type trilobite in Florida may be because of the suitable environment there, rather than because of the existence of some other type of barrier to faunal migration between Florida and the Appalachian province.

SYSTEMATIC DESCRIPTION

Family CALYMENIDAE Milne Edwards, 1840.

Genus COLPOCORYPHE Novák *in* Novák and Perner, 1918.

Type species. *Calymene arago* Rouault, 1849, from the Ordovician (Llandeilo) of north-western France.

Discussion. The outline of the glabella, position of eyes, thorax of 13 bluntly-terminated segments, and triangular pygidium combine to suggest that the Florida specimen belongs with the calymenid-homalonotid group of trilobites, which appears in Lower Ordovician times. It was first compared with illustrations of the homalonotid *Plaesiacomia rara* Hawle and Corda, 1847 (p. 55, Pl. 3, fig. 30; see also Barrande, 1852, pp. 581–582, Pl. 29, figs. 21, 22; 1872, p. 40, Pl. 5, fig. 27; Prantl and Přibyl, 1948, pp. 19–21, Pl. 2, fig. 6). The outline of the glabella, presence of two faintly defined pairs of lateral lobes, position of the eyes (far outwards and forwards), form of the thoracic segments and pygidium, are strikingly similar. *P. rara* is distinguished by the angulate outline of the pseudo-frontal glabellar lobe, the lack of ring furrows in the pygidial axis, lack of broad border and border furrow on the pleural lobes of the pygidium, and presence of the first pair of pygidial pleural furrows. The “small circular elevation” on the inner posterior part of the fixed cheek of *P. rara*, mentioned by Prantl and Přibyl (1948, p. 19), is apparently not present in the Florida specimen.

Dr. C. J. Stubblefield (personal communication) suggested that the Florida trilobite should also be compared with species of the calymenid *Colpocoryphe* Novák, 1918 (*in* Novák and Perner, 1918), and especially with *C. inopinata* Novák (*in* Pompeckj, 1898, p. 249; see also Novák and Perner, 1918, p. 37, Pl. 4, figs. 1–16; R. and E. Richter, 1927, pp. 73–75, Pl. 5, figs. 10, 11). The pygidium of *Colpocoryphe* is characteristic, the axis showing several ring furrows, the pleural lobes with few, faint pleural furrows, but with a broad, gently convex border. The border furrow runs from about the mid-point of the anterior margin of the pleural lobe, sub-parallel to the margin, to abut against the tip of the axis (e.g. Barrande, 1872, Pl. 2, figs. 35, 39). The Florida trilobite has this type of pygidium. The cephalon, however, differs from that of *C. arago* (Barrande, 1872, Pl. 2, figs. 34, 35; Pl. 8, figs. 11, 12) in that the eye is farther forwards and outwards, and the glabella lacks the deep glabellar furrows and well-defined lateral lobes. The cephalon of *C. inopinata* has the eyes as far out and forwards as the Florida specimen, and the glabellar furrows are faint, the lobes lacking independent convexity. Thus the Florida trilobite, while it bears a considerable resemblance to *Plaesiacomia rara*, has the distinctive

pygidium of *Colpocoryphe*, and the cephalon is like that of one species of the latter. It is therefore placed in *Colpocoryphe*, and regarded as a distinct species.

COLPOCORYPHE EXSUL sp. nov.

Pl. , figs. 1, 2.

Holotype. External mould in dark-grey, micaceous shale from core taken between 5154 and 5162 feet depth in Hunt Oil Company's J. W. Gibson No. 2 well, sec. 6, T 1S, R 10E., Madison County, Florida. This well was drilled in May, 1944, surface elevation 107 ft., and reached the top of the Palaeozoic rocks, beneath probable Lower Cretaceous rocks, at 4628 ft. depth. The total depth drilled to was 5381 feet, so that 753 feet of Palaeozoic rocks were passed through, mainly dark shale, some sandstones.

Geological Horizon. Late Lower or early Middle Ordovician (see above).

Description. Glabella of length (sagittal) 3.7 mm., maximum width immediately in front of occipital ring 3.8 mm., narrowing to 1.6 mm. across pseudo-frontal lobe, gently convex, antero-lateral margins straight, anterior margin bluntly rounded. Occipital ring .17 mm. long (sagittal), defined by a shallow furrow curving slightly forwards to the mid-line, deeper in the outer part. In front of the outer one-third of the occipital furrow is a low, narrow, transversely-directed inflation, strongest at the inner end, dying out distally. In front of this inflation the basal glabellar lobe is exceedingly faintly outlined, the first furrows commencing at the mid-length and running diagonally inwards to about one-third the width. The posterior edge of the lobe is defined by the transverse inflation. Second glabellar lobes are indicated by the second furrows, commencing at one-third the glabellar length, running parallel to the first and extending in to one-third the width at that point. Axial furrows deep, continuous with deep, preglabellar furrow. Fixed cheeks gently convex, broad, outer parts and borders not preserved. Anterior to the glabella a sagittally short preglabellar field is continuous with the cheeks, and the anterior margin of this field (probably the rostral suture) is a curve concave forwards, so that the length (longitudinal) of the preglabellar field increases outwards from the mid-line. Right palpebral lobe represented by a small, low swelling at the margin of the fixed cheek, situated

in line with the preglabellar furrow and 1.6 mm. out from the antero-lateral corner of the glabella.

Thorax of 13 segments. Axial ring of second segment 2.7 mm. wide, of last segment 1.6 mm. wide. Axis gently convex, articulating furrows deep. Pleurae of left side only preserved, width (transverse) of pleura of second segment 2.7 mm., of last segment 2.1 mm. Pleural furrow deep, straight, slightly diagonal, ending against broad facet. Tips of pleurae bluntly rounded.

Pygidium of length (sagittal) 2.7 mm., width measured over surface approximately 4.8 mm. Axis more than one-third total width, gently convex, the blunt tip not reaching the posterior margin. First three ring furrows distinct, fourth (situated just beyond half length) faint. Pleural lobe gently convex, no pleural furrows, divided at about half width by prominent longitudinal furrow which runs from the anterior margin sub-parallel to the lateral margin to abut against the tip of the axis. Narrow border behind tip of axis.

External surface of exoskeleton with reticulate pattern of fine, raised lines.

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